

NOTES.

THE Bureau des Longitudes of France has decided to send to Samarkand a scientific expedition to observe the eclipse of the sun which will be visible in Central Asia on January 13, 1907. M. Stefanik, astronomer attached to the Meudon Observatory, who accompanied the director, Dr. Janssen, in the expedition for the observation of the solar eclipse of August, 1905, has been selected as the chief of next year's expedition. M. Hansky, of the Pulkowa Observatory, will join him at Samarkand, and will be in charge of the Russian expedition for the same eclipse. M. Stefanik, who is now completing his preparations for departure, will take a kinematograph to reproduce the principal scenes of the observation of the eclipse by the French, Russian, and other missions.

WEATHER prophecy in the United States promises to make a distinct step in advance with the commencement of November. Arrangements have been made with the Central Physical Observatory at St. Petersburg for reports practically covering the great land area lying between the Russian capital and the Pacific—a region embracing nearly one-half the girth of the globe. Cable communications with Iceland, together with the facilities now afforded for weather messages by wireless telegraphy, will complete the information for the entire zone of the earth's atmosphere. These facilities will enable the U.S. Weather Bureau to extend considerably the area covered by its present forecasts, and to issue them for a longer period in advance. In winter, which is the stormy period of the year, Iceland embraces about the centre of the Atlantic low-pressure area, and the barometer changes experienced will afford much useful information. Indian meteorologists have long gauged the importance of the weather conditions over Asia for the framing of long-period forecasts, and a careful study of the minor atmospheric changes over-riding the more permanent seasonal conditions of this vast continent will doubtless aid much in advancing our knowledge of atmospheric circulation.

REFERENCE has already been made (October 11, p. 591) to the banquet given to Sir William Perkin in New York on October 6. *Science* of October 19 contains a paper read on that occasion by Dr. Hugo Schweitzer describing the influence that the discovery of the mauve dye has had upon the progress of chemical science, and a report of Sir William Perkin's own account of the discovery of this dye and the development of the coal-tar colour industry started by it.

THE *British Medical Journal* announces that a congress of practical hygiene will be held in Paris on March 26–31, 1907, under the presidency of Prof. R. Blanchard. The work of the congress, which will deal with food, alcoholism, the rearing of children, the workshop, country life, and the colonies, will be distributed among eight sections. The general secretary of the congress is M. Schaer-Vézinet.

BEFORE leaving South Africa, Sir David Gill, K.C.B., F.R.S., who will retire in February next after occupying the post of Astronomer Royal at the Cape since 1879, was entertained at a farewell dinner. Science, art, politics, literature, commerce, and other spheres of human activity were represented, and many testimonies were borne to the services rendered to science and to South Africa by Sir David Gill. The Hon. E. H. Walton, in proposing the toast of "Our Guest," referred to the active part taken by Sir David Gill in founding the Association for the Advancement of Science in South Africa, his work in

laying the foundations of a complete, accurate survey of the Cape peninsula, and his contributions to the progress of astronomical science by observations at the Cape Observatory established by him. In his reply, Sir David Gill took the opportunity to insist that all progress in the arts has followed the pursuit of pure science, and incidentally directed attention to his own efforts in organising new work and in urging the Government to provide funds to carry out necessary improvements.

THE *Home and Counties Magazine* for October contains an article, with portrait, on "Peter the wild boy," who was found in the forest of Hertswood, near Hanover, in 1725, and was brought to this country by order of Queen Caroline in the following year. After ineffectual attempts had been made to get him to speak and to educate him he was ultimately established, first at one and then at a second farm near Northchurch, Herts, where he died in 1785. The current statements as to his great climbing powers and his habit of going about on all fours were denied by the then headmaster of Berkhamsted Free School, to whom Peter was well known. Various matters connected with local history, architecture, church-plate, monumental brasses, &c., form the subjects of the other articles in the same issue.

IN the course of an address delivered at the eighteenth annual meeting of the Association of Economic Entomologists, and published in Bulletin No. 60 of the Entomological Section of the U.S. Department of Agriculture, Mr. H. Garman alluded to the prominent position now occupied by the economic entomologist. He it is, the speaker claimed, who has enlisted the attention of the public and educated it to the importance of entomology as applied to agriculture and other human concerns. "The pure science worker would never have done this, and it thus has happened that the entomologist who was at one time looked down upon by his fellow-worker with something in the nature of disdain, has taken first place in the estimation of the general public and demands attention when the recluse laboratory worker gets little consideration. And this is as it should be. The economic entomologist can claim all entomology as his." The rest of the issue is mainly devoted to an account of the work of the U.S. Bureau in fighting insects injurious to man and cattle, or harmful to crops and trees in the United States and its dependencies. The attention of those concerned may be directed to the fact that, on account of preoccupation, the generic term *Pyrosoma* (see p. 17 of the Bulletin) is not available for the organism of Montana spotted fever.

Two additions to the literature arising out of the British Association visit to South Africa have recently reached us. One is a small illustrated handbook by Dr. Haddon, F.R.S., published by the Union Castle Company, and dealing with the general features of South Africa and his impressions formed during the visit. The other is a contribution by Mr. C. F. Rousselet on the Rotifera of South Africa in the *Journal of the Royal Microscopical Society* for August. It contains lists of all the known species of South Africa. As the author points out, collecting, except at such places as the Victoria Falls, was difficult owing to the shortness of the visit and the general dryness of the country, but if one may judge from the large ratio which Mr. Rousselet's specimens bear to the total number of recorded species there must be plenty of work for any residents who will search for ponds and ditches in any part of South Africa. On the ship, going and coming, Mr. Rousselet took daily observations of the plankton contained in the hose-water.

"EDIBLE Earth in New Guinea" is the title of a communication by Mr. W. Meigen published in *Briefe der Monatsberichte der deutschen geologischen Gesellschaft* (1905, pp. 557-564). The earth in question is found on the east side of New Mecklenburg, where it is associated with decomposed coral; its main constituents are oxides of silica and aluminium; there is a smaller quantity of ferric oxide and traces of other substances, including ammonia. Mineralogically, the earth is composed of kaolin, hydrargillite, and ferric oxide; it is a fatty clay of yellowish colour, not unpleasant to the taste, and composed of very small particles. It is used for medicinal purposes, and may well counteract the laxative effects of the fish diet of dwellers on the coast. The article mentions the more important previous contributions to the discussion of the question of edible earths, of which, however, but few analyses have been published. A recent paper was noticed in *NATURE* of September 27 (p. 543); in vol. xxxiii. of the *Journal of the Royal Society of New South Wales* was published the analysis of some kaolinite from Fiji.

THE Bulletin of the Johns Hopkins Hospital for October (xvii., No. 187), in addition to articles of medical interest, contains an account by Mr. D. I. Macht of Moses Maimonides, a celebrated Jewish philosopher of the thirteenth century, who was physician to the Sultan Saladin and his successor, and the author of many religious, philosophical, and medical works. In his "Ethics" a complete system of practical hygiene is given which would well compare with the most recent text-books on the subject; lack of exercise, over-eating, alcohol, and excess are summarised as the causes of most diseases. Dr. T. R. Boggs describes a simple method for the quantitative estimation of the proteids in milk. The diluted milk is precipitated with phosphotungstic acid in hydrochloric acid solution, and the volume of the precipitate is read off in an ordinary Esbach albuminometer tube as used in wine analysis. The method is accurate to within 0.3 per cent. to 0.7 per cent., according to controls made by Kjeldahl determinations.

As agriculture in the Virgin Islands is dependent upon small cultivators, progress is hampered by the want of capital. In the annual report for 1905-6 of the experiment station maintained at Tortola, the curator, Mr. Fishlock, notes that the peasants are gradually realising the advantage of planting such permanent crops as cacao, limes, and rubber. The department also fosters cotton cultivation by supplying seed, buying seed-cotton, and preparing the lint for market.

THE July number of the Trinidad Bulletin contains the annual report for the past year, by Mr. J. H. Hart, on the Botanical Department. Seedling canes, rubber, and cacao form the largest items under plant distribution; there was also a considerable demand for young trees of Honduras mahogany, *Mimusops globosa*, that furnishes *balata*, and *Cedrela odorata*, the West Indian cedar. With the view of popularising its cultivation, a large number of plants of *Coffea robusta* was given away. In a note on the nests of Trigona bees, it is observed that the peculiar trumpet-shaped entrance is connected with the danger to returning bees of being caught by a spider that lurks near the opening.

THE second number of the Memoirs of the Department of Agriculture in India is devoted to the subject of Indian wheat rusts. Three distinct species, *Puccinia graminis*, black rust, *Puccinia glumarum*, yellow rust, and *Puccinia triticina*, orange rust, are commonly found. It was observed in 1904 that the first was most rampant in Central

India, while the latter two predominated further north, and therefore nearer the district where barberries are found. The authors, Mr. E. J. Butler and Mr. J. M. Hayman, have at present no explanation to offer for the origin of the disease year by year. The results obtained by inoculating barley with rust spores taken from wheat plants and *vice versa* show a considerable degree of specialisation, as very few of the inoculations succeeded.

THE superintendent of the Indian Museum, Calcutta, mentions in his annual report for the year 1905-6 that a number of Tibetan and Bhutanese specimens, chiefly robes, brass ware, and religious objects, was added to the art and ethnological collections, also various agricultural instruments from Assam. The report of laboratory work by Mr. D. Hooper contains, as usual, several interesting analyses. From the shoot of the common bamboo a food product is prepared, known in Assam as *gass-tenga*, that is eaten with rice; this contains an acid similar to aspartic acid that is probably derived from asparagin. Specimens of the bark of *Picrasma javanica*, used by the Karens as a febrifuge, yielded a bitter principle allied to quassinin. The analyses of latices from a number of different species of *Ficus* show that of those examined *Ficus elastica* alone furnishes rubber of commercial importance.

ATTENTION is directed in the *Journal of the Society of Arts* (vol. liv., No. 2812) to the soda lakes of Mexico on the great desert south of Yuma. These vast lakes of crystals of carbonate of soda are within 3000 yards of the sea. They are the property of the Mexican Government, and it is believed that they may become sources of enormous income to the country.

THE British Commercial Agent in the United States reports that the plan of storing coal under water is being adopted at a new plant west of Chicago. Twelve large cement-lined pits have been constructed with a bottom of clay soil. Their storage capacity is 14,000 tons. A 12-inch water pipe opens to the pits near the top, so that the coal can be flooded when required.

IN the *Engineering Magazine* (vol. xxxii., No. 1) Mr. Alfred Sang urges the practical value of industrial museums as exemplified by the Conservatoire des Arts et Métiers in Paris, and what was originally the Patent Office Museum at South Kensington. While satisfactory results must depend upon a board of management composed of experts in the various branches of science and of industry represented, the author gives examples of exhibits that would prove of special benefit to students.

IN the *Journal of the Franklin Institute* (vol. clxii., No. 4) Prof. Alfred J. Henry, of the U.S. Weather Bureau, gives an account of weather forecasting by synoptic charts. The method is based on two well-established facts, the general eastward drift of the atmosphere in temperate latitudes in the northern hemisphere, and the close relation that subsists between the weather and the distribution of atmospheric pressure. Within recent years there has been an appreciable gain in the accuracy of the forecasts. The period covered by the forecasts has been extended from eight to forty-eight hours, and instead of forecasts expressed in very general terms for large areas, definite forecasts are now made for all the larger towns and for each of the States and territories. The most important gain, however, is in the adaptation of the forecasts to the needs of special industries, the perfection of the system of flood warnings, and the general improvement in the warnings of severe storms and cold waves.

THE second part, dealing with labour, of the General Report on Mines and Quarries, has been issued by the Home Office as a parliamentary paper (Cd. 3179, price 10d.). It shows that the total number of persons employed at British mines and quarries in 1905 was 982,343, of whom 887,524 were employed at mines and 94,819 at quarries. During the year, 1103 separate fatal accidents occurred at mines and quarries, causing the loss of 1304 lives. Compared with the previous year, there is a decrease of fifty-five in the number of fatal accidents, and an increase of 102 in the number of lives lost. The general death-rate from accidents at mines was 1.358 per 1000 persons employed. Of the fatal accidents at mines, 44.0 per cent. were caused by falls of ground. Five fatal accidents were caused by the use of electricity underground. A very unusual accident is reported at Llanhilleth Colliery, where one man was killed and six men injured by the sudden blast of air caused by a fall from the side of a cavity. Some interesting statistics are given showing that gunpowder constituted more than 67 per cent. of the total weight of explosives used in collieries. About 30 per cent. of the weight used consisted of permitted explosives, those most largely used being bobbinite, saxonite, ammonite, roborite, and westfalite. Other statistics show that there were 295 collieries where coal-cutting machines were at work, the total number of machines being 946. The total quantity of coal obtained by the aid of these machines in 1905 was 8,102,197 tons.

WE have received from the director of the Geological Commission, Cape Town, South Africa, the first separately issued sheet of the geological map of Cape Colony. The geology is by the director, Mr. A. W. Rogers, Mr. E. H. L. Schwartz, and Mr. A. L. Du Toit. The colour printing is clear, and there is not too much detail. The size of the imprint is $21\frac{1}{2}$ inches by 27 inches; the scale is 1 inch = 1600 Cape rods, which is equivalent to about 3.7 miles to the inch. The commission is to be congratulated upon the production of an excellent map.

PART i., vol. xxxiv., of the Records of the Geological Survey of India contains two reports upon occurrences of coal, one in the foothills of Bhutan, by G. E. Pilgrim, the other in the Kotli Tehsil of the Jammu State (Dandli coalfield), by C. M. P. Wright. Mr. Pilgrim contributes also some notes on the geology of Bhutan; Dr. Diener supplies notes on some fossils from the Halorites limestone of Bambanag Cliff, in which he describes a new genus, Martolites, near to Celtites of Mojsisovics, and a new species of Halorites, *H. trotteri*. He also describes the Upper Triassic fauna of Pishin. In the appendix, analyses are given of three samples of muds from the Travancore coast.

THE *Rendiconto* of the Bologna Academy is sometimes rather late in appearance, but the three last numbers (1902-5) contain one or two papers of more than passing interest. Prof. Guido Tizzoni, in the name of Dr. Bongiovanni, read a note on the influence of radium on the virus of rabies. It was shown that radium rays rapidly destroyed the virus, both when contained in tubes and when applied to animals within an hour or so of their infection, and methods were found by which animals already suffering could be cured with certain results. The previous number (vol. viii.) contains an account of the botanical results of the two scientific expeditions to Montenegro organised by the Italian Government in 1902 and 1903.

A PAPER by M. Edouard Collignon on the solution of the cubic equation is published in abstract in the Proceedings of the Edinburgh Mathematical Society, xxiv. (1906). It is based on the property that every cubic can be reduced to one of the three forms $x^3 = \text{constant}$ or $x^3 \pm x = \text{constant}$. By tabulating the values of $x^3 + x$ and $x^3 - x$ for different values of x , the roots may be found in the same way that antilogarithms are taken from a table of logarithms. The properties of the roots are discussed in connection with the graphs of $x^3 \pm x$, and it will be noticed without going further into the details of the paper that the turning points of the curves determine very simply the conditions for three or one real roots. The author examines how far a similar method is applicable to curves of higher degree.

WE have often directed attention to the excellent series of monthly volumes entitled the *Practical Photographer*, edited by the Rev. F. C. Lambert, and published by Messrs. Hodder and Stoughton. It was found that the size of page was rather too small to show off effectively the fine reproductions from well-known photographs which were a distinct feature of the series. In April last the size of page was doubled, and since that date we have received the monthly issues, which indicate the wise policy of such a change. The present series is now termed the *Practical and Pictorial Photographer*, and is issued as a library series, the price being the same as the previous volumes, namely, one shilling. The October number is full of interesting matter, and is illustrated by seventeen reproductions.

FROM Messrs. Newton and Co. we have received a simple convex lens of 2.5 inches diameter, having a focal length of about 6 feet. On a small portion of the periphery of the lens is firmly sealed a metal base carrying a small screw, which enables the lens to be easily fixed to the end of a walking-stick or umbrella. The lens and attachment are enclosed in a neat leather case, which can be comfortably carried in the waistcoat pocket. This "unilens," which has recently been patented by Major Baden-Powell, serves the purpose of a low-power pair of opera-glasses without the trouble of carrying them. The use of such a lens in this manner is not new, but the present form of mounting will make it of more general service than hitherto. Those who possess approximately normal eyesight would find great comfort in having ready at hand such an easy means of magnifying distant objects. When placed on the end of a stick and the latter held out at arm's length, the object observed is seen at the greatest magnification, and even at less distances the object is always in focus, but not so much enlarged. The simplicity and portability of this "unilens" should find favour with many who are in search of a pocket telescope.

THE first part, comprising no less than 1437 titles, of a valuable catalogue of important works, chiefly old and rare, on mathematics, astronomy, physics, chemistry, and kindred subjects, has just been issued by Messrs. H. Sotheran and Co. This "Bibliotheca Chemico-mathematica" will be completed in three or four parts, which will be issued at intervals of a few months each. The part just received has on the first page works by Ernst Abbe, Abel, and Abercromby, and the last titles are of works by Galileo. Among numerous other volumes and memoirs included in the catalogue are a copy of the very rare first edition of the great work of Copernicus, "*De Revolutionibus Orbium Cœlestium*" (1543), which commenced a new epoch in the history of astronomy; the first

printed edition of Euclid's "Elementa Geometriæ" (1482); the first edition of de Caus's "Les Raisons des Forces mouvantes" (1615), to which, according to Arago, is due the invention of the steam engine; Daguerre's description of his invention of the Daguerreotype process of photography (1839), and the earliest works on ballooning. Bibliophiles and librarians looking out for scientific works of great rarity and interest, or for volumes of Proceedings of scientific societies and standard books on the exact sciences, will find it an advantage to consult the interesting catalogue the first part of which Messrs. Sotheman have just published.

MESSRS. GEORGE PHILIP AND SON, LTD., will shortly issue a novel perpetual calendar invented by the Rev. J. W. Wiles. It is claimed that by a simple arrangement the calendar will show the day of the week of any day in any year from the beginning of the Christian era to the end of time.

MR. W. A. SHENSTONE, F.R.S., has revised, and in some instances amplified, the essays he recently contributed to the *Cornhill Magazine*, and they will be published by Messrs. Smith, Elder and Co. to-morrow under the title of "The New Physics and Chemistry: a Series of Popular Essays on Physical and Chemical Subjects."

MESSRS. ARCHIBALD CONSTABLE AND CO., LTD., will publish very shortly a volume by Prof. E. Ray Lankester, F.R.S., entitled "The Kingdom of Man," containing a statement of the present position of scientific knowledge and the promise of the future.

THE second quarterly number of *Science Progress in the Twentieth Century* has now been published by Mr. John Murray. The ten articles included in this issue of the new scientific quarterly review range over many departments of science, and should appeal to a wide circle of readers.

THE first parts of two works of science which are being published serially by Mr. Fritz Lehmann, Stuttgart, have been received. "The Macrolepidoptera of the World," by Dr. Adalbert Seitz, is to be completed in 100 parts, and "Das Mineralreich," by Dr. Reinhard Brauns, in seventy-five parts. Both works are illustrated by excellently produced coloured plates. Messrs. Williams and Norgate are the agents of the publishers in this country.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER:—

- Nov. 5. 11h. 24m. to 12h. 34m. Moon occults ν Geminorum (mag. 4.1).
 9. 9h. Mercury at greatest elongation (E. $23^{\circ} 0'$).
 10. 12h. 17m. to 13h. 33m. Transit of Jupiter's Sat. IV. (Callisto).
 11. 7h. 15m. to 10h. 15m. Transit of Jupiter's Sat. III. (Ganymede).
 15. Saturn. Major axis of outer ring = $41'' \cdot 27$; minor $4'' \cdot 64$.
 „ 9h. 33m. Minimum of Algol (β Persei).
 15. Venus. Illuminated portion of disc = 0.070 ; of Mars = 0.959 .
 15-16. Epoch of November Leonids (Radiant $151^{\circ} + 23^{\circ}$).
 17-21. Epoch of November Andromedids (Radiant $25^{\circ} + 43^{\circ}$).
 18. 6h. 21m. Minimum of Algol (β Persei).
 18. 10h. 45m. to 13h. 46m. Transit of Jupiter's Sat. III. (Ganymede).
 19. 5h. 30m. to 6h. 34m. Moon occults σ Sagittarii (mag. 3.9).
 25. 14h. 11m. to 17h. 12m. Transit of Jupiter's Sat. III. (Ganymede).

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GREENWICH OBSERVATORY AND THE POWER STATION.—At the meeting of the Astronomische Gesellschaft recently held in Jena (September 12-15) Dr. Foerster directed attention to the erection of the large generating station near to Greenwich Observatory, and the consequent interference with the work of the institution. After Prof. Dyson had described the unfavourable position in which the observatory is situated, a resolution having the following effect was passed:—That the convention of the International Astronomische Gesellschaft, meeting in Jena, in view of the communication made in the latest report of the Greenwich Observatory, expresses the hope that the loss which would be occasioned if the observatory were removed may be averted. The resolution also expressed the hope that, as Greenwich has succeeded in establishing itself as the standard place, all future proposals to remove it may likewise be averted (*Astronomische Nachrichten*, No. 4127).

LUNAR CHANGES.—In No. 588 of the *Astronomical Journal* Prof. W. H. Pickering discusses Mr. Stebbins's observations of the lunar crater Linné, made during the eclipse of the moon which took place on February 8, 1906, and compares them with the similar observations made at the same time by Prof. Frost. Although some slight doubt exists as to the precision of one or two of Mr. Stebbins's measures, the curve showing the change in diameter of the spot surrounding Linné, according to his observations, agrees in general with the similar one obtained by Prof. Frost. Both show a substantial increase in the diameter immediately after the passing of the earth's shadow. Prof. Pickering ascribes this increase of diameter to the deposition of hoar-frost, or something analogous to it, caused by the drop in temperature consequent upon the screening off of the sun's rays by the opaque body of the earth. This phenomenon has now been observed by six observers working quite independently, several of whom were originally prejudiced against it, therefore Prof. Pickering considers that it may be accepted as confirmed.

The variation of the diameter of the spot during the ordinary course of lunation has similarly been confirmed by several observers, one of whom, Dr. C. W. Wirtz, discusses his observations at some length in No. 4118 of the *Astronomische Nachrichten*.

ECLIPSE OBSERVATIONS.—In No. 9, vol. xxxv., of the *Memorie della Società degli Spettroscopisti Italiani*, Prof. Riccò concludes his account of the eclipse observations made by the Italian expedition to Alcalá de Chivert in August, 1905. Among other matters he discusses "white prominences," and describes those seen during the eclipse in question as faint and indistinct, especially in the lower parts, and appearing as little more than a whitish shadow projected on to the background of the corona. He also suggests that these objects are in nature somewhat of an intermediate stage between the prominences and the true coronal streamers.

Estimating the height of the various layers of the solar atmosphere by two independent methods, Prof. Riccò found that that which he calls the "reversing layer," or the stratum producing the so-called "flash spectrum," extends to some $3''$ or 2000 km. (1250 miles). That part of the chromosphere which emits D₂ and F especially has a height of about $7''$ to $9''$, whilst the calcium vapours of the chromosphere extend to about $15''$ from the base. Photographs taken on special plates with a prismatic camera show that the maximum brightness of the continuous spectrum of the corona occurs in the yellow and red regions.

THE ZODIACAL LIGHT.—During the past summer Prof. Barnard, at the Yerkes Observatory, made a number of observations of the zodiacal light, the results of which he now publishes in No. 2, vol. xxiv., of the *Astrophysical Journal*. On June 22 he paid special attention to the phenomenon, and found it to be much more extensive than he had previously supposed. He concludes that the light extends at least 65° north and south of the sun (assuming the southern extent to be the same as the northern), a value considerably larger than that arrived at by Prof. Newcomb, observing in Switzerland, in the summer of 1905.